TITLE: THE RELATIONSHIP BETWEEN THE SOUTH AFRICAN MANUFACTURING SECTOR AND ECONOMIC GROWTH

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ABSTRACT

The manufacturing sector of the economy is the main driver of the economy for both developed and developing economies. The purpose of this study is to investigate the link between the South African manufacturing sector and economic growth. The study utilised time series data for the period 1980 to 2016. The study applied Kaldor's first law of economic growth theory and the endogenous growth model. The result of the parsimonious error correction model shows that the manufacturing output, gross fixed capital formation, labour force has a positive relationship with economic growth, while trade openness and inflation show a negative relationship with South African economic growth. The result of the manufacturing output and gross fixed capital formation are significant at 5 percent level of significance, why the labour force, trade openness and inflation are insignificance at 5 percent. The result shows both long and short-run relationship between the control variables and the South African economic growth for the period investigated. The study suggested an injection of capital and the implementation of policies in the manufacturing sector to increase manufacturing activities.

1. INTRODUCTION

Industrialization is regarded as the main key to the economy of both develop and developing nations. Lavopa & Szirmai, (2014) and Szirmai (2012) stated that Manufacturing exhibits special features that can be explained as its ability to absorb technological changes in addition to the economics of scale and bringing together of other global production processes. It is the main factor that changes any economy from primitive to the type of economy that fully incorporate its factor endowment and also do not concentrate on the supply of raw materials and unfinished goods from an external source (Oburota & Ifere, 2017). Adugna (2014) describes the manufacturing sector as the sector of the economy with the highest multiplier effect. The growth of any emerging economy like South Africa is only possible through the ability and the way-manufacturing sector is structured. The national development plan (NDP) published by the government of South African was of the intention to increase the rate of employment in South Africa from 13 million in 2010 to 24 million by the year 2030 (national development commission, 2012). Due to the governments, believe that the manufacturing sector has a crucial role to play in achieving this objective. The government expressed the type of labour intensive of the manufacturing sector in many government policy documents such as the new growth and industrial policy action plan document of the national government (Department of trade and industry, 2011). In the 2018 state of the nation address, president Cyril Ramaphosa promised to address the continued decline of the South African manufacturing to facilitate employment and export (SONA, 2018). This was with the main intention of achieving economic growth and stability.

Despite the above-mentioned government interventions in addressing the decline of the manufacturing industry, the South African manufacturing industry has continued to fall in its contribution to the economic growth and employment (Bhorat & Rooney, 2017). According to (Abedian, Kanda, Zanazo, & Mabindisa, 2011), the South African manufacturing sector is facing serious constraints compared to other countries that are of the same economic bracket. The attributed this to the depleting infrastructure, poor macroeconomic policies, and the impact of the 2008 global financial crises and other sectors shocks to global economic conditions. All this resulted in a serious decline in the performance of the manufacturing industry. The study as well shows that the Agricultural and manufacturing sectors have the highest output multiplier effects because they respond to any change that occurs in

investment. This is because of the strong relationship between manufacturing and agriculture (mostly agro-processing industry). This means that any increase in the manufacturing sector impacts positively in the area of the agricultural sector and there are also links between manufacturing and other viable sectors of the economy, for example, the majority of manufacturing sectors output are used as raw materials for productions in some other sectors of the economy.

Table 1.1: The production multiplier effect of any R1.00 to investment.

SECTOR	MULTIPLIER (R)
Agriculture	1.79
Manufacturing	1.13
Construction	0.81
Wholesale And Retail	0.72
Mining	0.60
Finance	0.49
Transport And Communication	0.03
Electricity	0.03

Source: (Abedian et al., 2011)

Table1.1. Summarizes the multiplier effect of different sectors to investment and found manufacturing R1.13 to have the second multiplier effect on an investment after Agriculture with electricity's R0.03 as the lowest. Production multipliers in the economy are not seriously measurable to the investment demand. whenever the value of Rand increases, the spending on investment leads to less than a Rand value in terms of changes in output. Moreover, this does not mean that other sectors are not beneficial to the economy. This means that the manufacturing sector has a close impact on shocks to other sectors of the economy. Therefore, the lowest multiplier effects do not mean minor sectors of the economy.

Considering the important role the manufacturing industry supposed to play in the economy of South Africa, it became important to investigate the role played by the

South African manufacturing sector on economic growth. On that note, the main aim of the study is to investigate the relationship between the South African manufacturing sector and economic growth using empirical data for the period 1980 to 2016. The remaining parts of the paper are stated as follows: Section 2 reviews of the literature, section 3, 4 and 5 as methodology, result presentation and analysis, conclusion and recommendation respectively.

2. REVIEW OF THE LITERATURE
a. EMPIRICAL LITERATURE REVIEW

The South African manufacturing sector is challenged by many issues such as the falling of the manufacturing strength, difficulties in the supply chain, challenges in the area of human capital and serious in other emerging markets and labour cost.

Edwards & Jenkins (2015) find the steady growth in the Chinese imports for more than a decade as the main reason for the decline in the production and increase in unemployment in the South African manufacturing sector. However, the impacts of Chinese trade are many and are grouped into different sectors. In other to explain the impacts, the study gathered data of 44 industries for the period 1992 to 2010 using econometric analysis to investigate the impact the Chinese trade has on the prices, output and rate of employment in the South African manufacturing sector. The rate in which Chinese control the South African market seems to be an increasing rate for long because of a decrease in imports from other countries and this has a tremendous effect on local industries.

Nel, Rogerson, Marais, & Wessels (2004) described South Africa as a country with a good manufacturing foundation that is better than other developing economies. However, many years of sanctions and high dependence on primary products affect the level of growth in the sector. Sectors that have attained competitiveness and improved market are not included. In South African perspective,(Bell & Madula, 2002) argues that considering the current movement of the different sectors that are part of the South African economy, manufacturing has an important responsibility in the area of employment and attainment of economic growth for political and economic considerations. Moreover, little skills, technology, and market access are the challenges that hinder growth.

Makgetla (2014) identified manufacturing as the engine that drives south African economic growth and employment. However, the manufacturing sector stops been the main drivers of employment. Fedderke & Naumann (2011) did a survey of the South African manufacturing sector targeting the concentration and markup levels for the purpose of policymaking. The study measures industrial concentration in different ways. The study found strong evidence that markups are higher comparing to other countries and are at an increasing rate.

b. THEORETICAL LITERATURE REVIEW

Many theories link the relationship between manufacturing product and economic growth. Some of the theories that explain the relationship between manufacturing and economic growth are the Kaldo growth theory, Big push theory and the theory of the endogenous growth (Kaldor, 1966). The study explains the level of growth in developed economies during the post-war period. This also shows the link between the growth of the industrial output and the strength of the economy. This was the main basis of Kaldor's first law, which explains the important linkage between the manufacturing growth and the level of the economy. This confirms the notion that the manufacturing sector is the strength of any countries economy. Kaldor's first law can be expressed as:

$$gGDP = \partial_a + \partial_1 gMAN \qquad (1)$$

Where:

$gGDp$ represent the total growth of the output and $gMAN$ is the manufacturing sector growth.

The coefficients are expected to be positive and less than unit, which means that the general level of growth in the economy is due to the high growth rate in the manufacturing industry and are higher than the level of growth in other sectors. This proves that economic growth is possible where the shares of the manufacturing sector to GDP are in an increase (Libanio, 2006).

Around the middle of the 1980s, some economists who are not satisfied with the neoclassical growth theory advocated for the theory that regards endogenous factor

as the key drivers of the economy. The main work of the model is the work of (Lucas Jr, 1988; Romer, 1986). The endogenous growth model assumed that economic growth related to the exogenous factors. The model describes investment in human capital, innovation and knowledge as the important factors that bring economic growth. The endogenous growth model believes that long-run economic growth centred on the policy measures adopted such as investment in research, innovation and human capital development especially in the area of research and development (R&D), and other institutions that promote patent, property rights and policy that promotes incentive for innovations. The model explains why technology transfer is so important for developing countries and poor countries have a lower level of technology if they do not have much research and development. The use of resource allocation for research and development that encourage technological improvement is supported by the endogenous growth model (Romer, 1990). The endogenous growth theory advocates argue that the economic growth will at a decline. Therefore, the level of technological change depends on the effectiveness of the institutions in place for that particular economic system.

Another important theory used in most literature that links manufacturing and economic growth is the theory of big push. This theory was developed by (Rosenstein-Rodan, 1968). The model argues that a well-organised activity is vital in increasing the level of investment to tackle the problem associated with the underdeveloped economy and put them in the path of growth. The model argues that for the industrialisation of an undeveloped economy needs a strong and serious way of training the labour force on skill acquisition, capacity building and putting in place quality institutions as well as the development of other sectors of the economy like the agricultural sector. This theory was in line with the theory of balanced growth.

This paper utilised the Kaldo theory of economic growth and the theory of endogenous growth to investigate the relationship between the manufacturing sector and the economic growth of South Africa.

c. THE SOUTH AFRICAN ECONOMY AND THE STRUCTURE OF THE MANUFACTURING SECTOR

As indicated by the World Bank report (2015) South African economy is the second biggest economy in Africa, just behind Nigeria. South African economy represents 24 percent of African total national output and is an upper-middle income country as indicated by the World Bank. The South African economy has experienced a significant change since the end of apartheid. It recorded an average rate of 3.3 percent economic growth over the period 1994 to 2012, a surprising change on the 1.4 percent average economic growth for the period 1980 to 1993 (industrial development corporation, 2013). However, the pace of growth decreases by 3.6 percent average recorded in the world economy. The South African economy experiences the fastest growth rate since the 1960s over the period 2004 to 2007, with genuine GDP growth averaging percent.

The way the South African economy was structured changed extensively over a period. The South African economy has a well-developed tertiary sector, which represented roughly 69 percent of the nation's GDP in 2012, which is a tremendous increase compared to 60 percent in 1994 (industrial development corporation, 2013).

Prior before the end of apartheid, South Africa encountered a low level of economic growth since at the end of Second World War because of economic sanctions on the apartheid regime. This leads to increased inflation, loss of business confidence, and reduction in investment (Faulkner & Loewald, 2008). The GDP growth increased by 100 percent from 1995 to 2003 against 1980 to1994 (Nowak & Ricci, 2005). The inability of South African manufacturing to be export-oriented degraded its growth opportunities and employment opportunities (Rodrik, 2008).

3. METHODOLOGY

The study used secondary data extracted from the South African reserve bank (SARB) and the world development indicator (WDI) for the period 1980 to 2016. The study followed the triangulation of Kaldor first law and endogenous growth theory in examining the relationship between manufacturing output and economic growth.

MODEL 1

According to the Kaldo first law, there is a close relationship between manufacturing output growth and economic growth.

This can be explained using the stated linear function:

RGDP= F (MAN)   (2)

Where RGDP is the growth output and MAN represent the manufacturing output. This indicates that the growth of the manufacturing output has a positive relationship with the general growth of the economy.

MODEL 2

The theory of endogenous growth theory emphasises the importance of technological efficiency for any economic growth to take place. Ubi & Udah (2014) argues that technological improvement depends mostly on how strong the institutions are, which has a big impact on both formal and informal in the political, economic and social interactions.

The endogenous growth models are in the form of:

$$Y = AK^\alpha L^{1-\alpha}$$ (3)

Where Y is the real domestic product (economic growth), A represent technological change, K and L represent the capital and labour input used in the production process.

In a situation where there is symmetry across industries, the same level of capital and labour are utilised by each industry for production activities. Then the production function is in the form of:

$$Y = AK^\alpha L^\beta$$ (4)

The alphabet A represents the efficiency parameter, which depends on the level of technology and $\alpha \ and \ \beta$ is the coefficient of the elasticity.

$$A = F(TECH)$$ (5)

Where,

Tech represents all other factors that affect economic growth.

Equation 4 and 5 are substituted to have:

$$Y = F(TECH, K, L) \tag{6}$$

This means that for South Africa to achieve sustainable economic growth, the manufacturing sector must invest in both human and capital development. Manufacturing can be incorporated into the endogenous model through technological change. The model is further transformed by substituting equation 6 into the model of Kaldor's law in equation (2) to arrive at the model in equation (7).

$$Y = F(MAN, TECH, K, L) \tag{7}$$

Where:

Y is the function of MAN, for manufacturing output; TECH, K, and L which represents technology, capital and labour.

The study expanded the combination of Kaldor's and the endogenous model adopted by (Oburota & Ifere, 2017) and added trade openness and inflation to the model to have:

$$Y = F(MAN, GFCF, LB, TO, INF) \tag{8}$$

Where, Y is the function of MAN, GFCF, LB, TO, and INF which represent manufacturing output, gross fixed capital formation as representative for capital, labour, trade openness and inflation respectively. This model can be explained using the model of Cobb-Douglas production function as presented:

$$Y_t = A X_{1_t}^{\beta_1} X_{2_t}^{\beta_2} X_{3_t}^{\beta_3} X_{4_t}^{\beta_4} X_{5_t}^{\beta_5} e^{\mu i} \tag{9}$$

Where:

Y is used to represent the Gross domestic product, A intercept of the coefficient, $X_1, X_2, X_3, X_4, and X_5$ represents manufacturing output, gross fixed capital formation, labour, trade openness and inflation respectively. While e^{ui} is the exponential error term.

The study expanded the combination of Kaldor's and the endogenous model adopted by (Oburota & Ifere, 2017) by adding trade openness and inflation to the model to have:

The econometric model was adopted by (Oburota & Ifere, 2017) and modified to include trade openness and inflation. The researcher does not know any study that used this type of model in the South African context.

In order to meet the target objective, equation (9) is transformed to log form.

$$lnGDP_t = \alpha_0 + \beta_1 lnMAN_t + \beta_2 lnGFCF_t + \beta_3 lnLB_t + B_4 lnTO_t + \beta_5 lnINF_t + \mu_t \quad (10)$$

The $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ signs are expected to be > 0.

Equation 8 will be estimated using ordinary lease square after testing all the time series properties to avoid spurious regression by the use of Eviews 10 software.

a. DATA SOURCE AND ISSUES

The study used the time series data generated from the SARB and WDI for the period 1980 to 2016. The variables used for the study, its sources and units of measurements are stated in table 3.1.

Table 3.1. Summary of variables

acrimony	Variable	Description of variable	Unit of measurement	source
GDP	Gross domestic product	Gross domestic product constant 2010	US dollars	SARB
MAN	Manufacturing	Manufacturing value added constant 2010	US dollars	SARB
GFCF	Gross fixed the capital formation	Gross fixed capital formation as a percentage of GDP	Percentage of GDP	SARB

LB	Labour	Manufacturing labour productivity	Index	SARB
TO	Trade openness	Summation of the total export and import of goods and services	Percentage of GDP	SARB
INF	Inflation	Consumer price index	Index	WDI

Source: Generated by the authors

4. RESULT PRESENTATION AND ANALYSIS

The study used Augmented Dicky-Fuller (ADF) test to find the features of the time series variables as shown in table 4.1. The result indicates that all the variables are stationary at order 1(1) (first difference). This means that the variables LGDP, LMAN, LGFCF, LLB, LTO, and LINF are integrated at order one 1(1). In order to investigate if there is the existence of a long run relationship between the variables under investigation, a co-integration test was conducted using the Johansen co-integration test.

The Johansen co-integration tests in table 4.2 show the 4 co-integration equations at 5 percent level of significance. Because with four co-integrating vectors, it can be assumed that the long-run relationship between the LGDP, LMAN, LGFCF, LLB, and LTO AND LINF do exist. The four co-integrating vectors confirm the economic meaning of the long run effect of the manufacturing output on economic growth that can be obtained by normalizing the estimates of the unconstraint in the co-integration equations on economic growth.

Table 4.1: ADF unit root test

VARIABLES	CONSTANT		CONSTANT AND LINEAR		NONE		1ST DIFFERENCE	
	ADF	**5% CRITICAL VALUE**	**ADF**	**5% CRITICAL VALUE**	**ADF**	**5% CRITICAL VALUE**	**ADF**	**5% CRITICAL VALUE**
LGDP	-0.607391	-2.948404	-2.340028	-3.544284	0.379238	-1.950687	-4.005947	-2.948404

LMAN	-0.341018	-2.945842	-2.061350	-3.540328	2.238679	-1.950394	-5.990335	-2.948404
LGFCF	-0.464089	-2.948404	-2.955913	-3.544284	0.722133	-1.950687	-3.355231	-2.948404
LLB	-1.225556	-2.945842	-2.283305	-3.568379	0.155117	-1.950394	-5.529384	-2.948404
LTO	0.070354	-2.945842	-2.995950	-3.540328	2.911428	-1.950394	-4.869865	-2.948404
LINF	-2.230998	-2.945842	-3.282536	-3.540328	-0.866107	-1.950394	-5.640347	-2.957110

Source: Generated by the authors using the result from Eviews 10.

Table 4.2: Johansen co-integration test for an economic growth model

Series: LGDP LMAN LGFCF LLB LTO LINF		
Lags interval (in 1st differences): 1 to 1		
Hypothesized **No. of CE(s)**	**Eigenvalue**	**Trace** **Statistic**
None *	0.669476	124.8565
At most 1 *	0.578662	86.10882
At most 2 *	0.507824	55.85762
At most 3 *	0.429684	31.04546
At most 4	0.184491	11.39068
At most 5 *	0.114413	4.252668

The trace shows four cointegrating equation(s) at the 5 percent
0.05 level indicates the rejection of the hypothesis
MacKinnon-Haug-Michelis (1999) p-values

Source: generated by the authors through the Eviews 10 result.

Table 4.3. OLS regression model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LMAN	0.293797	0.085042	3.454736	0.0016
LGFCF	0.253159	0.027019	9.369706	0
LLB	0.046456	0.022509	2.063892	0.0475
LTO	-0.18521	0.038156	-4.85396	0.0000
LINF	-0.017914	0.00878	2.040418	0.0499
C	6.191901	0.520632	11.89305	0.0000
R-squared	0.96754	Mean dependent var	10.78696	
Adjusted R-squared	0.962305	S.D. dependent var	0.092147	
S.E. of regression	0.017891	Akaike info criterion	-5.06169	
Sum squared resid	0.009922	Schwarz criterion	-4.80046	
Log-likelihood	99.64117	Hannan-Quinn criteria.	-4.96959	
F-statistic	184.8047	Durbin-Watson stat	0.884625	

Source: Generated by the authors using the Eviews 10 results.

Table 4.3 shows the ordinary lease square result generated from the Eviews 10 econometric software. The result shows that all the control variables are statistically significant at the 5 percent level. This means that the variables LMAN, LGFCF, LLB, LTO, and LINF are relevant to the model estimated. The result shows that the log of manufacturing output, gross fixed capital formation, and labour has a positive relationship with economic growth, while trade openness and inflation has a negative relationship with South African economic growth. This result can say to have serial correlation and there the model is spurious because the R-squared of 0.967540 is greater than the Durbin-Watson stat of 0.884625 and therefore, the result is not accepted or trusted.

The accepted model is the parsimonious error correlation model presented in table 4.4.

Table 4.4: Parsimonious error correction model (ECM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.00297	0.001855	-1.59997	0.1208
D(LMAN)	0.314262	0.081119	3.874093	0.0006
D(LGFCF)	0.176699	0.031545	5.601514	0.0000

D(LLB)	0.018515	0.016231	1.140745	0.2636
D(LTO)	-0.06415	0.048046	-1.33511	0.1926
D(LINF)	-0.005772	0.004725	1.221649	0.232
U(-1)	-0.55335	0.163258	-3.38943	0.0021
R-squared	0.85068	Mean dependent var		0.002804
Adjusted R-squared	0.818682	Standard Deviation for dependent variable		0.022715
S.E. of regression	0.009673	Akaike info criterion		-6.2622
Sum squared resid	0.00262	Schwarz criterion		-5.95113
Log likelihood	116.5885	Hannan-Quinn criter.		-6.15482
F-statistic	26.58603	Durbin-Watson stat		2.170706

Source: Generated by the authors through the Eviews results.

The result shows that the manufacturing outputs are positive and is in line with economic theory, and are statistically significant at 5 percent. This means that every one percent rise in manufacturing output increases the economic growth by 0.314262 percent. This proves that the manufacturing sector is important for economic growth. The gross fixed capital formation has a positive relationship with economic growth and is statistically at 5 percent level of significance. The result shows that at every 1 percent increase in gross fixed capital formation, the South African economic growth increases by 0.177 percent, which are also in line with the economic theory. The table shows that labour is positive at 0.0186 and insignificant at the 5 percent level of significance. The result means that every 1 percent increase in the labour force leads to 0.0186 percent increase in the South African labour force.

The trade openness and inflation have negative coefficients, which indicate a negative relationship between trade openness, inflation and economic growth of South Africa. The result also shows that both variables are insignificant at the 5 percent level of significance. The result of the trade openness may indicate the trade imbalance between South Africa and the developed economies, while the result of the inflation is in line with the economic theory and prior to expectation.

The error correction mechanism coefficient (ECM) shows that the variables are co-integrated. This is because the coefficients are negative and are significant. The result of the ECM shows a 55 per cent relative high-speed adjustment of the short

and long run equilibrium behaviour of the independent variables and the economic growth (dependent variable).

The adjusted R^2 means that 85 percent of all the (dependent variable) economic growth variation as measured by the gross domestic product is well explained by the changes in the dependent variables (manufacturing sector, gross fixed capital formation, labour force, trade openness, and inflation). The model also has a good fit of 26.8 which means that all the variables are jointly statistical at 5 percent level and the Durbin Waston statistics of 2.1 is an evidence of no serial correlation.

5. CONCLUSIONS AND RECOMMENDATION

The study investigated the relationship between the South African manufacturing sector and economic growth using the empirical method. The result shows that manufacturing output, gross fixed capital formation, labour, trade openness and inflation has a serious impact on South African economic growth for both the short and long run for the period under review.

Manufacturing sector output can only have a positive influence on the economic growth if there is availability of capital, an improvement in the technology, skilled and qualified labour force. This will enhance the performance of the manufacturing sector.

Considering the findings of the study, it became important for the manufacturing sector to be the engine powering the economy for the attainment of the desired economic growth. On that note, the policymakers should place maximum priority in providing an enabling environment for capital development and also in the area of innovation and capital development. This will affect positively the development of innovation and creation of new ideas and leads to a decrease in the transactional cost, which will increase the South African manufacturing sector output and economic growth.

REFERENCES

Abedian, I., Kanda, P., Zanazo, P., & Mabindisa, G. (2011). Assessing the manufacturing sector and its multiplier effects on the South African Economy. Pan-African Investment and Research Services Johannesburg, South Africa, 30.

Adugna, T. (2014). Impacts of the manufacturing sector on economic growth in Ethiopia: A Kaldorian approach. Journal of Business Economics and Management Sciences, 1(1), 1-8.

Bank, S. A. R. (2017). South African Reserve Bank. Retrieved from South African Reserve Bank: https://www. resbank. co. za.

Bell, T., & Madula, N. (2002). The manufacturing industry, 1970-2000. The Decline of the South African Economy, Edward Elgar, Cheltenham, 99-142.

Bhorat, H., & Rooney, C. (2017). "State of Manufacturing in South Africa". Development Policy Research Unit Working Paper 201702.

Edwards, L., & Jenkins, R. (2015). The impact of Chinese import penetration on the South African manufacturing sector. The Journal of Development Studies, 51(4), 447-463.

Faulkner, D., & Loewald, C. (2008). Policy change and economic growth: a case study of South Africa: International Bank for Reconstruction and Development/The World Bank.

Fedderke, J., & Naumann, D. (2011). An analysis of industry concentration in South African manufacturing, 1972–2001. Applied Economics, 43(22), 2919-2939.

Kaldor, N. (1966). Causes of the slow rate of growth of the United Kingdom: An inaugural lecture. Cambridge University, Cambridge.

Lavopa, A., & Szirmai, A. (2014). Structural modernization and development trap: an empirical approach. UNU-MERIT Working Paper(076).

Libanio, G. (2006). Manufacturing industry and economic growth in Latin America: A Kaldorian approach.

Lucas Jr, R. E. (1988). On the mechanics of economic development. Journal of monetary economics, 22(1), 3-42.

Makgetla, N. (2014). Manufacturing employment and equality in South Africa.

National Planning Commission (NPC) (2012). National Development Plan 2030 - Our Future Make It Work. Available online at: http://www.npconline.co.za/MediaLib/Downloads/Downloads/NDP percent202030 percent20- percent20Our percent20future percent20- percent20make percent20it percent20work.pdf

Nel, E., Rogerson, C., Marais, L., & Wessels, J. (2004). Manufacturing industry study for the Free State. Current trends, spatial and sectoral consideration and future prospects, Rhodes University, Grahamstown, University of the Witwatersrand, Johannesburg, and the Centre for Development Support (CDS), Bloemfontein.

Nowak, M., & Ricci, L. A. (2005). Post-Apartheid South Africa: The First Ten Years (Washington: International Monetary Fund).

Oburota, C. S., & Ifere, E. O. (2017). Manufacturing Subsector and Economic Growth in Nigeria. British Journal of Economics, Management & Trade, 17(3), 1-9.

Ramaphosa,C. (2018). President Cyril Ramaphosa: 2018 State of the Nation Address | South African Government. [online] Gov.za. Available at: http://www.gov.za/speeches/president-Cyril Ramaphosa-2018-state-nation-address-16-feb-2018-0000 [Accessed 13 mar. 2018].

Rodrik, D. (2008). Understanding South Africa's economic puzzles. Economics of Transition, 16(4), 769-797.

Romer, P. M. (1986). Increasing returns and long-run growth. Journal of Political Economy, 94(5), 1002-1037.

Romer, P. M. (1990). Endogenous technological change. Journal of Political Economy, 98(5, Part 2), S71-S102.

Rosenstein-Rodan, P. N. (1968). The consortia technique. International Organization, 22(1), 223-230.

Szirmai, A. (2012). Industrialisation as an engine of growth in developing countries, 1950–2005. Structural change and economic dynamics, 23(4), 406-420.

Ubi, P., & Udah, E. (2014). Corruption, Institutional Quality and Economic Performance in an Emerging Economy: Lessons from Nigeria. british journal of economics, management and trade, 4(11), 1708-1722.

World Bank. International Economics Dept. Development Data Group. (1999). World development indicators. World Bank.